First GaN-on-insulator substrate

France's Soitec Group has developed the world's first single crystal, thin-film GaN-on-insulator substrate, using proprietary Smart Cut layer-transfer and wafer-bonding technology.

A joint technology development programme between the Soitec Group and French research consortium CEA-Leti, SCEALAB was established to advance experimental composite substrates. Soitec's technology was used to split and transfer a thin layer of GaN from a high-quality GaN donor wafer onto a carrier wafer. This generated the single crystal GaN-on-insulator substrate.

"This first demonstration of GaN-based substrates was made possible thanks to Smart Cut technology, and it is truly an outstanding SCEALAB achievement.

"This GaN capability is a part of our roadmap strategy to develop and supply advanced engineered substrates for compound semiconductors for a variety of applications," stated Jean-Luc Ledys, COO of Soitec's Picogiga International divison.

Carlos Mazuré, Soitec Group's CTO, said: "This research was performed in very close collaboration with our III-Vs material division, Picogiga International, whose plans to industrialize the new technology are a key component of Soitec's strategy to extend its technology-development efforts by combining Smart Cut with Picogiga's epitaxial technology."

Today, GaN epitaxial layers are grown on bulk substrates, such as silicon, silicon carbide and sapphire. In the future, RF power devices and high-volume market blue and white LEDs will experience technical limitations in terms of power or brightness that require new technology solutions. GaN-on-insulator substrates with high-quality GaN topsides, provide the industry with a solution to enhance the quality and performance of active epitaxial GaN layers.

ISO 9001:2000 certification rounds off the success . . .

Picogiga International has been granted ISO 9001:2000 certification, and becomes the first pure-play supplier of compound epitaxial substrates to achieve the distinction. Delivered on January 18, 2005 by Lloyd's Register Quality Assurance, the certification covers the development, manufacture and sales of Picogiga's compound semiconductor materials.

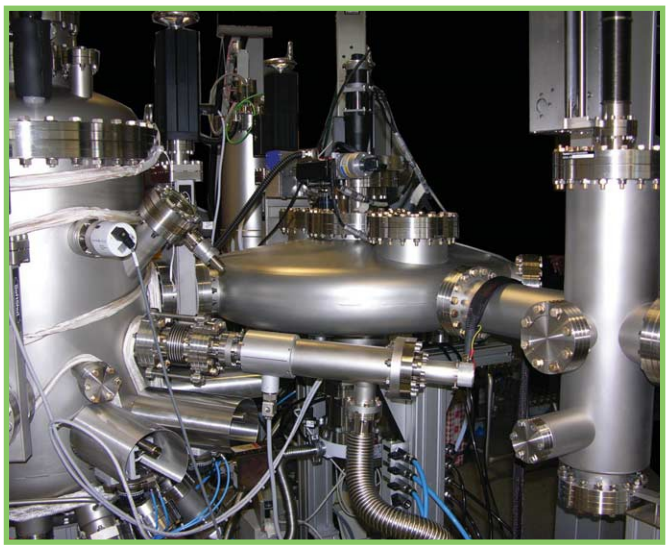
Taiwan first

Taiwan's National Changhua University of Education (NCUE) has purchased a Clusterlab600, becoming the first customer for the new MBE system from Oxford Instruments Plasma Technology (OIPT).

NCUE will use it to grow GaN films and epitaxial layers for laser diodes, including DVD LDs and VCSELs, and for both InGaN and AlGaN based LED devices. Other intended applications include spintronics, with the growth of epitaxial Mn:GaN/InGaN films.

Launched in August 2004, the Clusterlab600 offers transfer in vacuum between MBE and other processes. While previously it was necessary to expose devices to atmosphere between etch and overgrowth MBE, or between MBE and metal or dielectric deposition, the system's in-vacuum transfer now avoids this and the potential for device degradation due to such exposure. Flexible configuration is maintained allowing the customer to select the best combination of process technology for their development programme. For example, the system can be integrated with the PlasmalabSystem100 RIE, ICP and PE-CVD tool.

Jim Williams, sales director, and GM of OIPT's MBE operation, said: "Receiving this order shortly after the product launch is a great vote of confidence in the new Clusterlab600 instrument, and a positive demonstration of the first year's success in integrating the former VG Semicon MBE business into Oxford Instruments."



OIPT's Clusterlab600 offers transfer in vacuum between MBE and other processes.

GaN grows in China

Aixtron AG has received an order for a Thomas Swan Close-Coupled Showerhead reactor from China's Nanjing Electronic Devices Institute (NEDI). The 6x2" configured reactor will be used for the growth of nitrides, especially GaN HEMT structures.

NEDI has already installed one Aixtron 200/4 system which is being used for growing InGaAsP PIN structures.

Prof. Mao Kun Chun, NEDI's chief engineer, said: "We believe that this system will assist us in receiving outstanding research results for GaN, AlN and AlGaN materials. The 6x2" reactor configuration is ideally suited for our purposes."

II-VI Inc awarded ISO 9001:2000

II-VI Inc announced that its Wide Bandgap Materials Group (WBMG), in Saxonburg, Pennsylvania, has been certified to the ISO 9001:2000 standard by DNV Certification Inc.

With II-IV Inc's WBMG location in Pine Brook, New Jersey having received its certification in 2003, the entire business unit now becomes ISO 9001 certified.